

REMARKS

The Applicants thank the Examiner for the very thorough consideration given the present application.

Status Of The Claims

Claims 1-8, 12-16, and 19-26 are pending this application. Claims 1 and 12 are independent. Claims 9-11, 17 and 18 have been cancelled. Claims 21-23 find support at page 11, lines 1-6 of the specification. Claims 24-26 find support at page 10, lines 9-11 of the specification.

Rejection Under 35 U.S.C. § 103

Claims 1-6 and 12-14 are rejected under 35 U.S.C. §103(a) as being obvious over Munakata (U.S. Patent 6,373,540) in view of Umemoto (U.S. Patent 6,196,692), Chang (U.S. Patent 6,166,400), Ono (U.S. Patent 5,847,781) Chang (U.S. Patent 6,166,400) and the newly applied references of Tadahisa (JP02-02832) and Tsubota (U.S. Patent 5,629,787). The Examiner adds the teachings of Onishi (U.S. Patent 5,450,220) to this rejection to reject claims 7, 8, 15, 16, 19 and 20. Applicants traverse.

The Present Invention And Its Advantages

The present invention pertains to a liquid crystal display that has a high aperture ratio, a high contrast ratio and an enhanced display quality.

Although there are many embodiments of the invention, one of the many novel aspects of the invention resides in that the substrate containing the switching element is arranged so that there are light absorbing materials sandwiching the switching element. To this effect, claim 1 recites a "first light absorbing film under the gate electrode" and "a black matrix formed on the passivation film and over the switching element." Claim 12 contains similar embodiments. The light absorbing film is further set forth in claims 3-6 and 21-26. One advantageous effect of the light absorbing films of the present invention is to absorb ambient incident light to reduce the undesirable reflected light dazzle effect (claims 21-23).

The present invention finds a typical embodiment in claim 1:

1. A liquid crystal display device, comprising:
 - a display panel including a lower layer at the lowest portion of the display panel and an uppermost layer, positioned above the lowest layer at the uppermost portion of said display panel;
 - a first substrate forming said uppermost layer of said display panel, including:
 - a) a switching element on the first substrate, said switching element being connected to a gate line and a data line, the switching element being a thin film transistor having a gate electrode formed on the first substrate, a gate insulating layer formed on an exposed surface of the first substrate while covering the gate electrode, an active layer on the gate insulating layer over the gate electrode, an ohmic contact layer on the active layer, a source electrode on the ohmic contact layer, a drain electrode on the ohmic contact layer, and a first light absorbing film under the gate electrode;
 - b) a passivation film formed over the whole surface of the first substrate while covering the switching element;
 - c) a pixel electrode on the passivation film;

- d) a black matrix formed on the passivation film and over the switching element;
 - e) a color filter formed over the pixel electrode; and
 - f) a first orientation film formed on the black matrix and the color filter and above the pixel electrode;
- a second substrate having no switching element disposed thereon, forming said lowest portion of the display panel, said second substrate being aligned with the first substrate, said second substrate having a common electrode and a second orientation film, said second orientation film being formed on the common electrode;
- a sealant for sealing said first and second substrates;
 - a liquid crystal layer interposed between said first and second substrates; and
- a backlight device disposed beneath said second substrate such that said second substrate is located between said backlight device and said first substrate.

Distinctions Of The Invention Over The Applied Art

Distinctions of the invention over Munakata, Umemoto, Chang, Ono and Onishi have been placed before the Examiner. For brevity, these observations are not reproduced in detail in this paper. Tadahisa and Tsubota are newly applied.

At pages 2-6 of the Office Action, the Examiner turns to Figs. 2A-2D and 3A-3J of Munakata and posits inverting or turning the configuration 180° upside down. However, Munakata is directed to a reflective guest-host-liquid crystal display device that utilizes incident light (see, e.g. Munakata at column 1, lines 6-13). In contrast, the present invention utilizes a backlight to provide light and additionally utilizes light absorbing films to eliminate reflectance from ambient incident light. The Examiner is thus changing the principle of operation of Munakata. If the proposed modification or combination of the

prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Also, by inverting the cell configuration of Munaka, the liquid crystal display would no longer be able to operate in reflective mode to thus render Munkata unsuitable for its intended purpose. If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

At page 6 of the Office Action, the Examiner turns to Figs. 6-7 of Umemoto, which shows a light source 31, a light conductive plate 1 and associated layers. The Examiner also posits turning this configuration upside down. However, Umemoto pertains to a light conductive plate for a reflection type liquid crystal display (column 1, lines 8-10) and, similar to Munakata, inverting the configuration would both change the principle of operation (*In re Ratti, supra*) and render the prior art invention unsuitable for its intended purpose (*In re Gordon, supra*).

That is, both Munakata and Umemoto pertain to reflectance displays, and there is no motivation to invert the configuration and use these teachings in transmissive backlight display technology. The mere fact that references can be combined or modified does not render the resultant combination

obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). See also *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992).

At pages 5-6 of the Office Action, the Examiner acknowledges some of the deficiencies of Munakata. The Examiner admits that Munakata does not disclose a second substrate formed adjacent a backlight device that is disposed beneath a second substrate such that the second substrate is located between the backlight device and the first substrate. The Examiner further admits that Munakata fails to disclose the ohmic contact layer forming between the active layer and source and drain electrodes, wherein the source electrode overlaps one end portion of the active layer and the drain electrode overlaps the other end portion of the active layer. The Examiner additionally admits that Munakata fails to disclose a first light source absorbing film under the gate electrode, a second light absorbing film under the source electrode and a third light absorbing film under the drain electrode, sealing the first and second substrates with sealant and injecting the liquid crystal.

The Examiner turns to Umemoto, Chang, Ono, Tadahisa, Tsubota and Onishi to supply these deficiencies. However, the Examiner is using up to seven references to allege obviousness over the present invention. Alleging

obviousness over this multitude of references can only be achieved via impermissible hindsight reconstruction.

“Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is a rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.” *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (CAFC 1999). *See also In re Kotzab*, 217 F.3d 1365, 1369-70, 55 USPQ2d 1313, 1316 (CAFC 2000). “Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight.” *Dembiczak* at 50 USPQ2d 1617. “The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time.” *Dembiczak* at 50 USPQ2d 1617. “The patent examination process centers on prior art and the examination thereof. When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness . . . The factual inquiry must be thorough and searching. It must be based on objective evidence of record.” *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-44 (Fed. Cir. 2002).

Particularly, the Examiner now turns to Tadahisa for teachings pertaining to a light absorbing film. However, Munakata and Umemoto are

both directed at reflectance type displays. As a result, there is no motivation to use a light absorbing film when the object of Munakata and Umemoto is to attain reflectance, i.e., minimize light absorption. Accordingly, Munakata and Umemoto teach away from the present invention. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983). A *prima facie* case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

Therefore, as shown above, any combination of Munakata, Umemoto, Chang, Ono, Tadahisa, Tsubota and Onishi would fail to motivate one having ordinary skill in the art to produce a claimed embodiment of the invention, such as is set forth in independent claims 1 and 12. A *prima facie* case of obviousness has thus not been made. Claims depending upon claims 1 and 12 are patentable for at least the above reasons.

These rejections are overcome and withdrawal thereof is respectfully requested.

Foreign Priority

The Examiner has acknowledged foreign priority and indicated that a certified copy of the priority document has been received in the Office Action mailed February 12, 2002.

The Drawings

A Drawing Correction Authorization Request was filed on May 10, 2002. The Examiner is respectfully requested to consider this paper and indicate whether the proposed drawing corrections are acceptable in the next official action.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone

Application No.: 09/633,782
Amendment of December 29, 2005
Response to Office Action of September 29, 2005

Docket No.: 3430-0129P

Robert E. Goozner, Registration No. 42,593, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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